

AMENDMENTS IN THE ABSTRACT:

A frequency and phase control apparatus includes an analog/digital conversion section for converting a reproduction signal into a multiple bit digital signal based on a clock signal; a maximum likelihood decoding section for converting the multiple bit digital signal into a binary signal; a pattern detection section for detecting a pattern of the binary signal; and a determination section for determining whether or not the multiple bit digital signal and the clock signal are in synchronization with each other based on the detection result. When the determination result of the determination section indicates that the multiple bit digital signal and the clock signal are in synchronization with each other, the maximum likelihood decoding section generates a binary signal based on a first state transition rule; otherwise, the maximum likelihood decoding section generates a binary signal based on a second state transition rule.